WHAT IS CLAIMED IS:

1. An apparatus for bend-shaping a glass sheet, comprising:

a heating furnace for heating the glass sheet, transferred therethrough along a path of travel thereof, to a substantially softening temperature of the glass sheet, said heating furnace having an inlet positioned upstream of said path of travel and an outlet positioned downstream of said path of travel;

a plurality of in-furnace beds disposed within said heating furnace, each of said in-furnace beds having an upper surface of upwardly convex shape with a curvature increasing progressively toward said outlet of said heating furnace, said upper surfaces being designed to jet hot air against the glass sheet to support the glass sheet in a floated state thereover such that the glass sheet bends transversely by own weight thereof complementarily to the shape of said upper surfaces;

at least one out-furnace bed disposed externally of said heating furnace proximately to said outlet of said heating furnace, said out-furnace bed having an upper surface of upwardly convex shape, said in-furnace beds and said out-furnace bed being arranged linearly along said path of travel; and

an elevating mechanism, disposed below a downstream end of that one of said in-furnace beds which is positioned proximately to said outlet of said heating furnace and below an upstream end of said out-furnace bed, for elevating said downstream end of said one in-furnace bed and said upstream end of said out-furnace bed to cause said one in-furnace bed and said out-furnace bed

to form a hill sloped in a direction along said path of travel, so that upon passage over said hill, the glass sheet bends longitudinally by own weight thereof complementarily to the shape of said hill,

said upper surface of said out-furnace bed being designed to jet cold air against the glass sheet transferred past said outlet of said heating furnace to cool down the glass sheet while supporting the same in a floated state thereover.

2. An apparatus for bend-shaping a glass sheet, according to claim 1, further comprising a slide mechanism for sliding at least one of said one in-furnace bed and said out-furnace bed in said direction along said path of travel of the glass sheet.

3. An apparatus for bend-shaping a glass sheet, according to claim 1, wherein said one in-furnace bed has a downstream end surface of curved configuration, and said out-furnace bed has an upstream end surface of curved configuration.

4. An apparatus for bend-shaping a glass sheet, according to claim 1, wherein said downstream end surface of said one in-furnace bed has a lower corner, and said upstream end surface of said out-furnace bed has a lower corner, at least one of said lower corners of said downstream and upstream end surfaces being chamfered.

5. An apparatus for bend-shaping a glass sheet, according to

claim 1, further comprising a guide roll, disposed in a space defined between said one in-furnace bed and said out-furnace bed, for guiding the glass sheet along said path of travel.

6. An apparatus for bend-shaping a glass sheet, according to claim 5, wherein said guide roll has a curved configuration conforming to the curved shape of the glass sheet.

7. An apparatus for bend-shaping a glass sheet, according to claim 1, further comprising an air jet nozzle, disposed in a space defined between said one in-furnace bed and said out-furnace bed, for jetting air against the glass sheet to thereby guide the latter along said path of travel.

8. A method for bend-shaping a glass sheet in a bend-shaping apparatus including a heating furnace having an outlet positioned downstream of a path of transfer of the glass sheet, a plurality of in-furnace beds disposed within said heating furnace, at least one out-furnace bed disposed externally of said heating furnace proximately to said outlet in end to end relation to that one of said in-furnace beds which is positioned proximately to said outlet, said in-furnace beds and said out-furnace bed having upper surfaces curved transversely, said method comprising the steps of:

elevating a downstream end of said one in-furnace bed and an upstream end of said out-furnace bed to a predetermined bed inclination height H so that said one in-furnace bed and said

out-furnace bed jointly form a hill which allows to impart a desired radius of curvature C to the glass sheet, said bed inclination height H being obtained by first determining a first relation between the bed inclination height H and an apparent bed radius of curvature R on a basis of a length L1 of said one in-furnace bed forming an uphill of said hill, a length L2 of said out-furnace bed forming a downhill of said hill, the bed inclination height H, and a length G of the glass sheet in a direction of transfer thereof, and then determining a second relation between the apparent bed radius of curvature R and the desired radius of curvature C of the glass sheet;

heating the glass sheet in said heating furnace to a substantially softening temperature of the glass sheet and jetting hot air from said upper surfaces of said in-furnace beds to floatingly support the glass sheet in such a manner as to allow the glass sheet to bend by own weight thereof transversely complementarily to the shape of the transversely curved in-furnace beds;

transferring the transversely bent glass sheet over said hill so that the glass sheet bends longitudinally complementarily to the shape of the hill sloped in said direction of transfer; and

transferring the bi-directionally bent glass sheet past said outlet onto said out-furnace bed and jetting cold air from said upper surface of said out-furnace bed to cool the bi-directionally bent glass sheet while supporting the latter in a floated state.

9. A method for bend-shaping a glass sheet, according to claim 8, wherein curvature (1/C) represented as a reciprocal of the glass sheet radius of curvature C falls in a range of $0<(1/C)<1x10^{-4}$ mm^{-1}.

10. A method for bend-shaping a glass sheet, according to claim 8, wherein the relation between said apparent bed radius of curvature R and said glass sheet radius of curvature C is represented by $R=0.43xC+12.8x10^{3}$ (unit: mm).

11. A method for bend-shaping a glass sheet, according to claim 8, wherein the cooling of the glass sheet over said out-furnace bed comprises air quenching the glass sheet.